

In the Claims

Please amend claims 11 and 16 as indicated below, wherein any additions to the amended claims are underlined, and any deletions to the amended claims are presented either between double brackets or as struckthrough text.

Please also add new claims 17-26 as presented below.

1. (Original) An image processing apparatus, comprising:

a first signal processing circuit for applying gamma correction to an n-bit (n : a natural number) digital signal inputted as a video signal, and for converting the digital signal into an m-bit ($m > n$, m : a natural number) digital signal; and

a second signal processing circuit for adding a noise signal to the m-bit digital signal from said first signal processing circuit, and for outputting a Q-bit (Q : a natural number) digital signal obtained from rounding off a less significant ($m - Q$) bit ($Q \leq n$) from the m-bit digital signal.

2. (Original) The image processing apparatus as set forth in Claim 1, wherein:

said first signal processing circuit includes bit converting means for converting the inputted n-bit digital signal into the m-bit digital signal in accordance with a pre-set value.

3. (Original) The image processing apparatus as set forth in Claim 2, wherein:

said bit converting means is a Look Up Table which outputs the m-bit digital signal that is the present value in accordance with the inputted n-bit digital signal.

4. (Original) The image processing apparatus as set forth in Claim 2, wherein:
said bit converting means is a calculating device for converting the n-bit digital signal into the m-bit ($m > n$) digital signal by numerical calculation.
5. (Original) The image processing apparatus as set forth in Claim 1, wherein:
said first signal processing circuit and said second signal processing circuit are provided for respective RGB colors.
6. (Original) The image processing apparatus as set forth in Claim 1, wherein:
an average value of a signal level of the noise signal is set to zero.
7. (Original) The image processing apparatus as set forth in Claim 1, wherein:
the noise signal is a random noise signal with no regularity in its cycle of amplitude.
8. (Original) The image processing apparatus as set forth in Claim 1, wherein:
the noise signal is obtained from, by using an arbitrary noise pattern table, switching a starting point of the noise pattern table per field or per noise pattern table.
9. (Original) The image processing apparatus as set forth in Claim 1, wherein:
a histogram of an amplitude of the noise signal shows Gaussian dispersion where zero amplitude of the noise signal is at the center.

10. (Original) An image processing apparatus, comprising:

a signal processing circuit for adding a noise signal to an inputted m-bit (m: a natural number) digital signal, and for outputting a Q-bit (Q: a natural number) digital signal obtained from rounding off a less significant (m - Q) bit ($Q < m$) from the m-bit digital signal.

11. (Currently Amended) An image display apparatus comprising:

an image processing apparatus as set forth in claim 1;

[[a]] display means for displaying an image[[,]]; and

driving means for driving the display means,~~said image display apparatus,~~
~~further comprising:~~

~~an image processing apparatus that includes (a) a first signal processing circuit for applying gamma correction to an n-bit (n: a natural number) digital signal inputted as a video signal and for converting the n-bit digital signal into an m-bit ($m > n$, m: a natural number) digital signal, and (b) a second signal processing circuit for adding a noise signal to the m-bit digital signal from said first signal processing circuit and for outputting a Q-bit (Q: a natural number) digital signal obtained from rounding off a less significant (m - Q) bit ($Q < n$) from the m-bit digital signal.~~

12. (Original) The image display apparatus as set forth in Claim 11, wherein:

said first signal processing circuit includes bit converting means for converting the inputted n-bit digital signal into the m-bit digital signal in accordance with a pre-set value.

13. (Original) The image display apparatus as set forth in Claim 12, wherein:
the pre-set value in said bit converting means is rewritable so that unevenness in properties of said driving means may be absorbed.

14. (Original) The image display apparatus as set forth in Claim 12, wherein:
the pre-set value in said bit converting means is rewritten in accordance with brightness in surroundings of said image display apparatus.

15. (Original) The image display apparatus as set forth in Claim 12, wherein:
the pre-set value in said bit converting means is rewritten in accordance with brightness of overall display image of said display means.

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16. (Currently Amended) An image display apparatus, comprising:
an image processing apparatus as set forth in claim 10 ~~which includes a signal processing circuit for adding a noise signal to an inputted m-bit (m: a natural number) digital signal and for outputting a Q-bit (Q: a natural number) digital signal obtained from rounding off a less significant (m - Q) bit (Q < m) from the m-bit digital signal.~~

17. (New) An image processing apparatus, comprising:

a first signal processing circuit (a) for applying gamma correction to a digital video signal inputted therein, (b) for expanding a bit number of the digital video signal from n bit to m bit ($m > n$: n and m are natural numbers), and (c) for outputting the digital video signal; and

a second signal processing circuit (d) for adding a noise signal to the digital signal thus outputted from the first signal processing circuit, (e) for converting the number of the digital video signal from m bit to Q bit by rounding off a less significant ($m - Q$) bit ($Q \leq n$: Q is a natural number), and (f) for outputting the thus obtained digital video signal whose bit number is Q bit.

18. (New) The image processing apparatus as set forth in Claim 17, wherein the second signal processing circuit includes:

a noise generating circuit for generating the noise signal;

an adding circuit for adding the noise signal thus generated by the noise generating circuit, into the digital video signal whose bit number is Q bit and that is supplied from the first signal processing circuit, and for outputting the digital video signal to which the noise is added;

a bit number converting circuit for converting the bit number of the digital video signal by rounding off a less significant ($m - Q$) bit of the digital video signal whose bit number is m bit and to which the noise is added by the adding circuit.

19. (New) The image processing apparatus as set forth in Claim 18, wherein the noise generating circuit includes:

an address counter for outputting pixel addresses, the pixel addresses being incremented, pixel by pixel, in a horizontal direction and incremented, line by line, in a vertical direction,

a noise ROM for storing noise data enough for one screen, and for outputting the noise signal that is to be supplied per pixel, in accordance with the pixel addresses thus outputted from the address counter.

20. (New) An image display apparatus comprising:

an image processing apparatus as set forth in Claim 17;

display means for displaying an image; and

driving means for driving the display means.

21. (New) The image display apparatus as set forth in Claim 20, wherein the display means is a liquid crystal display.

22. (New) The image display apparatus as set forth in Claim 20, wherein the image processing apparatus is separately provided.

23. (New) The image display apparatus as set forth in Claim 20, wherein the first signal processing circuit is a lookup table for carrying out gamma correction, and wherein the image processing apparatus includes:

a sensor for detecting brightness in surroundings of the image display apparatus; and

a control circuit for rewriting a gamma value of the lookup table in accordance with output from the sensor.

24. (New) The image display apparatus as set forth in Claim 20, wherein the first signal processing circuit is a lookup table for carrying out gamma correction, and wherein the image processing apparatus includes:

A, an average value calculating circuit for calculating an average value of a signal level of a video signal; and

a control circuit for rewriting a gamma value of the lookup table in accordance with output from the average value calculating circuit.

25. (New) The image display apparatus as set forth in Claim 20, wherein the first signal processing circuit is a lookup table for carrying out gamma correction, and wherein the image processing apparatus includes:

an area judging circuit for judging an area to be displayed on the display means; and

a control circuit for rewriting a gamma value of the lookup table in accordance with output from the area judging circuit.

26. (New) The image display apparatus asset forth in Claim 1, wherein the display

means is a liquid crystal display.
